FIG.1

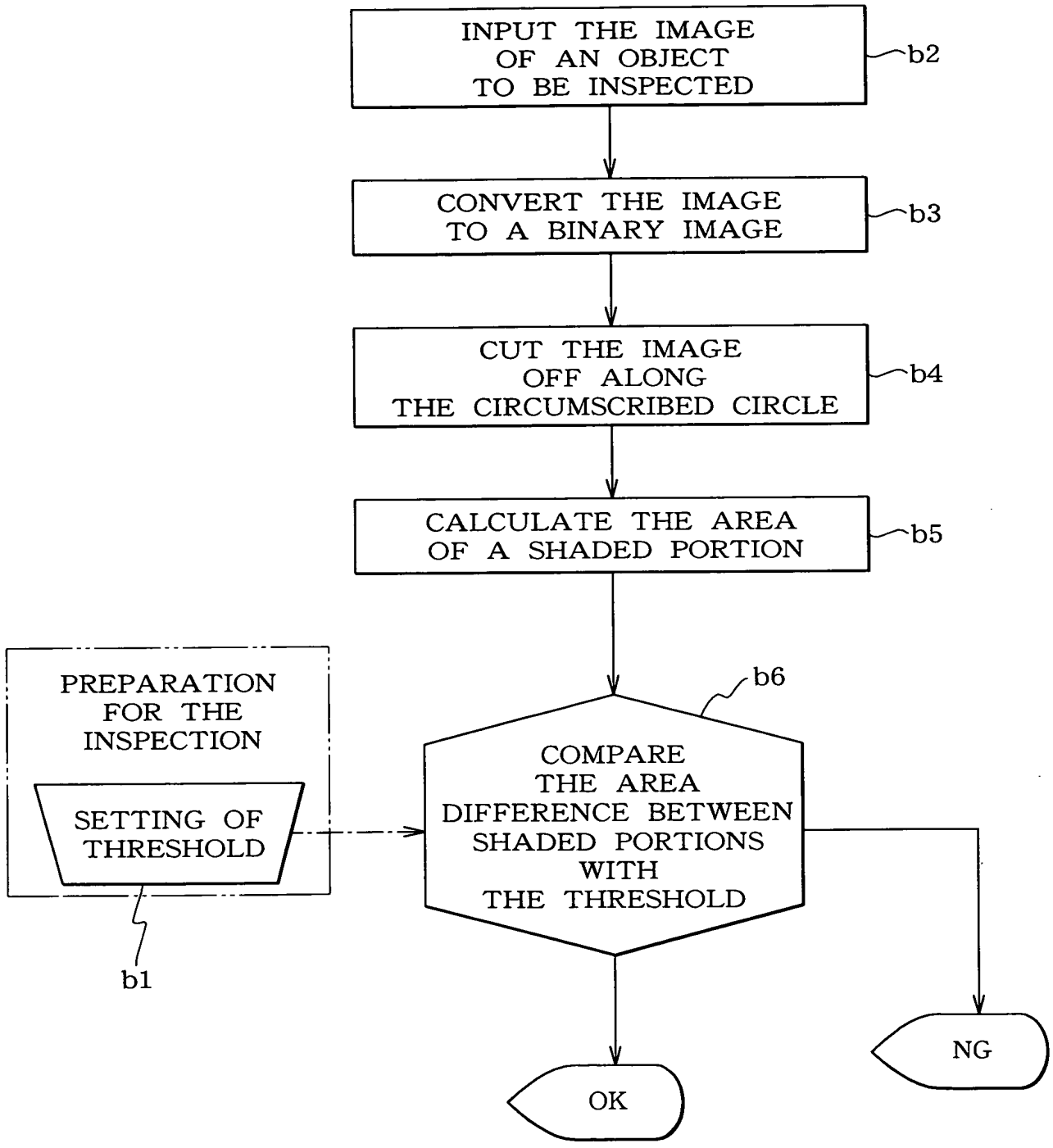

INPUT THE IMAGE OF AN OBJECT TO BE INSPECTED
b2
CONVERT THE IMAGE TO A BINARY IMAGE
b3
CUT THE IMAGE OFF ALONG THE CIRCUMSCRIBED CIRCLE
b4
CALCULATE THE AREA OF A SHADED PORTION
b5
PREPARATION FOR THE INSPECTION
SETTING OF THRESHOLD
b1
b6
COMPARE THE AREA DIFFERENCE BETWEEN SHADED PORTIONS WITH THE THRESHOLD
OK
NG

FIG.2(a)

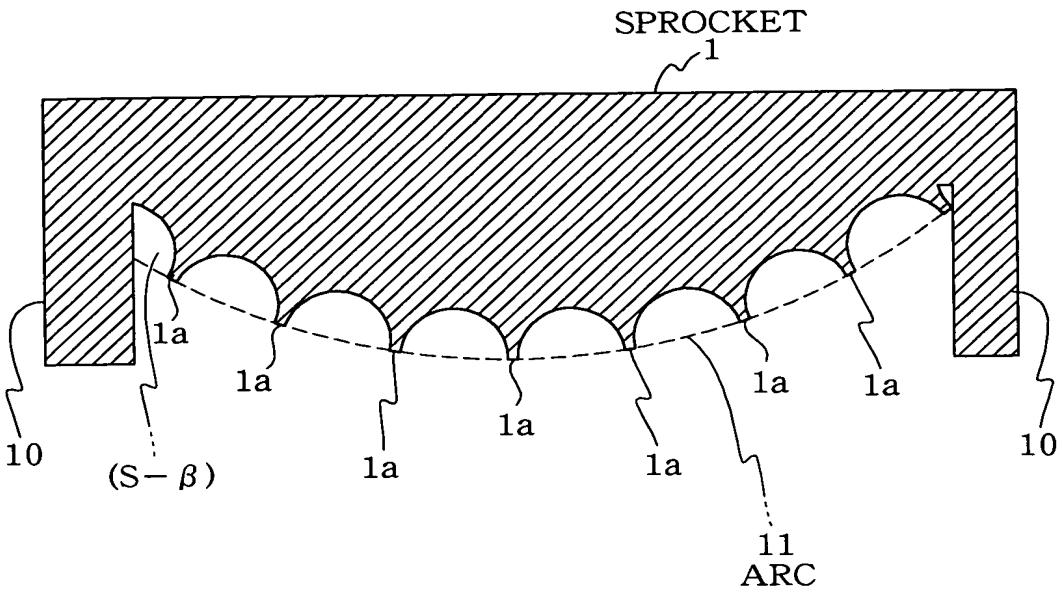
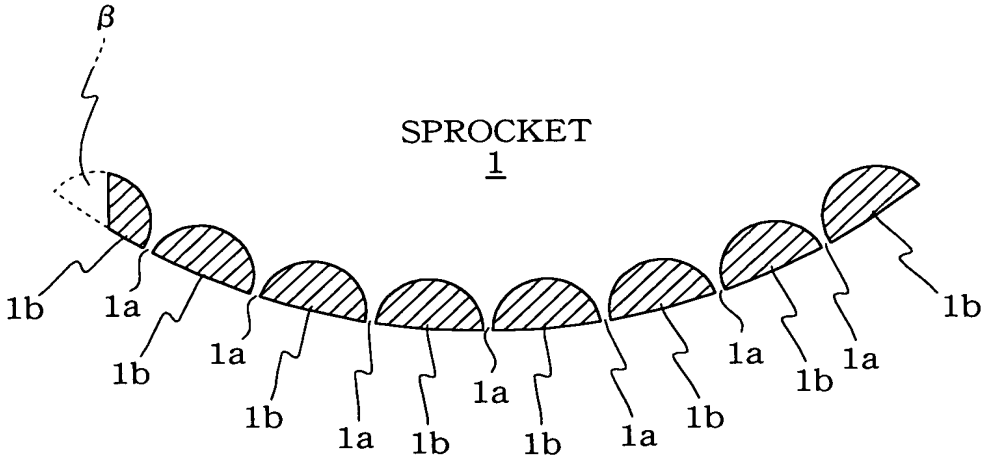

SPROCKET
1
1a
1a
1a
1a
1a
1a
10
(S−β)
1a
1a
10
11
ARC

FIG.2(b)


β
SPROCKET
1
1b
1a
1b
1a
1b
1a
1b
1a
1b
1a
1b
1a
1b
1a
1b
1b

EP 0 954 696 B1

FIG.3(a)

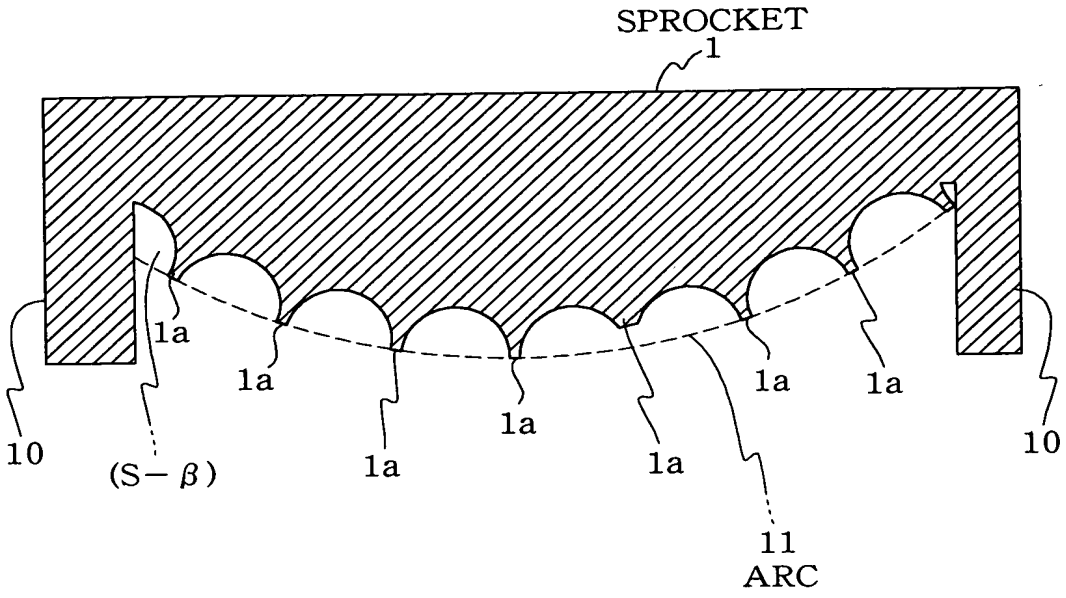


FIG.3(b)

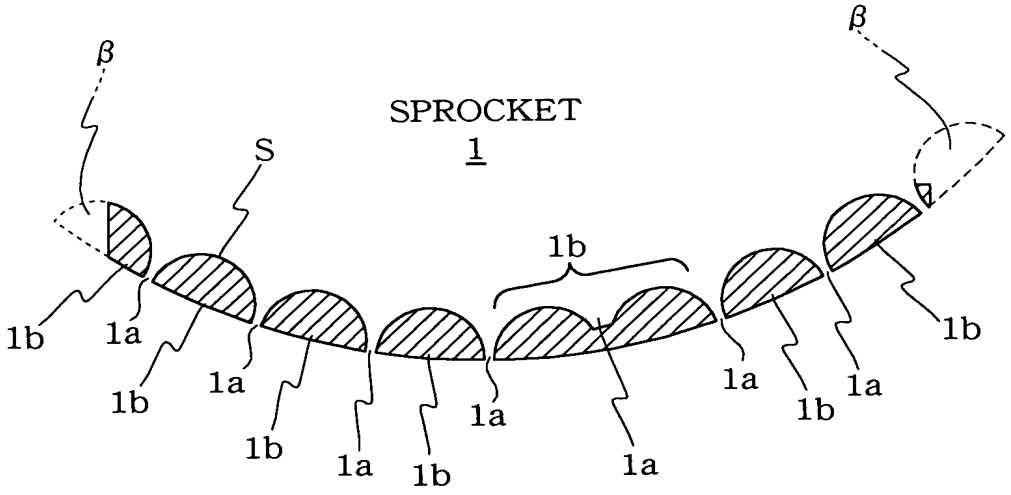


FIG.4

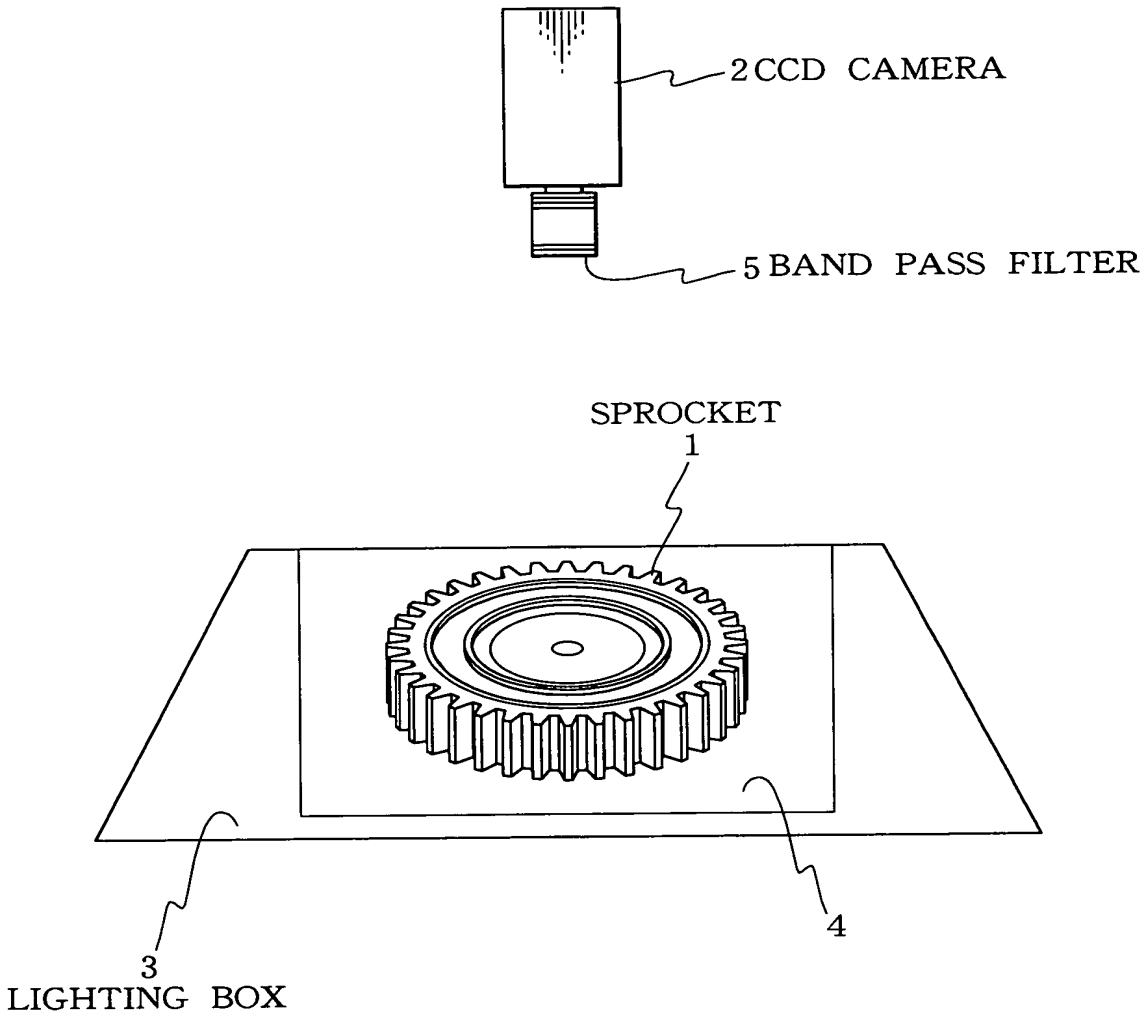


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FIG.5

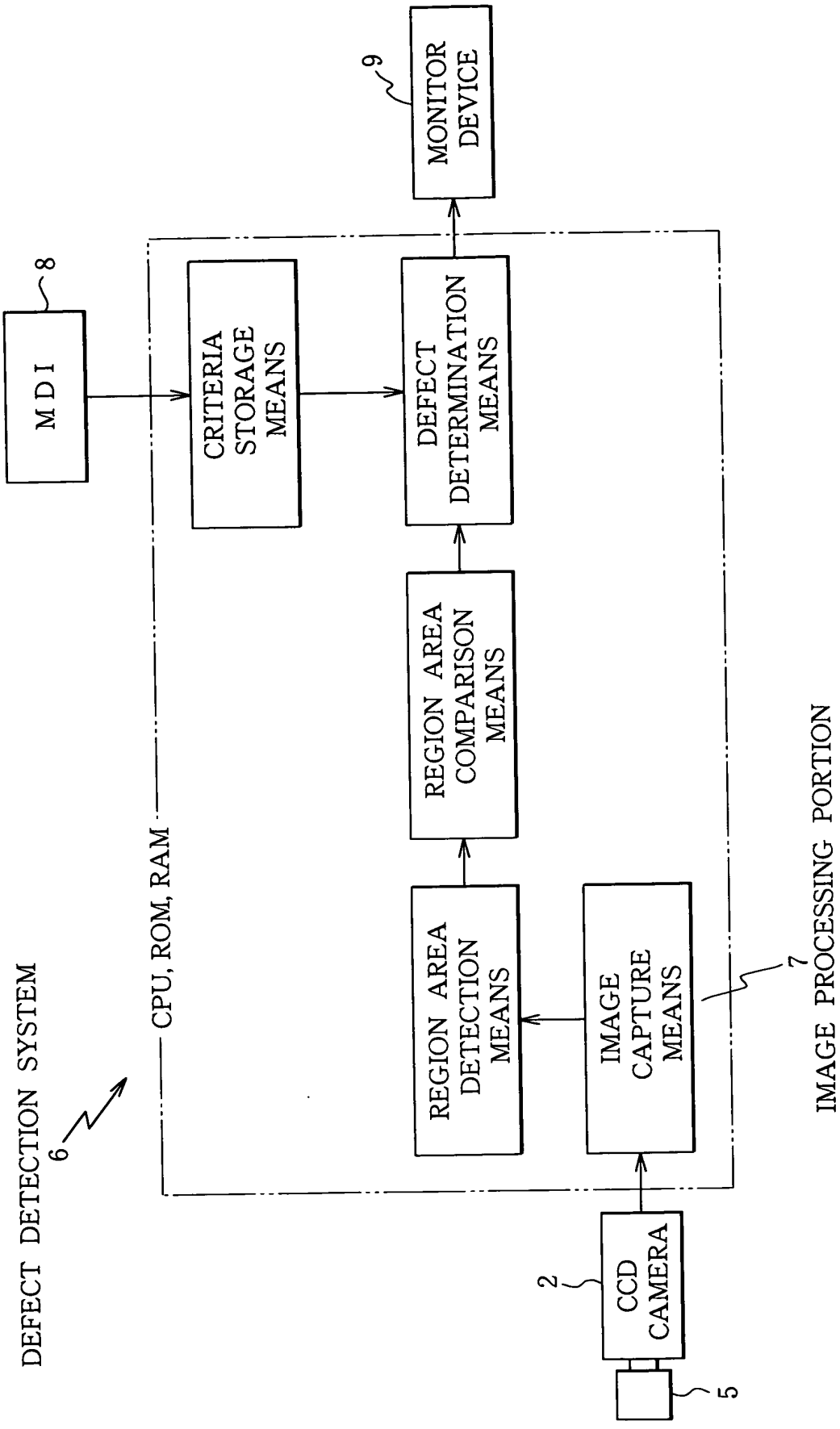

FIG.6

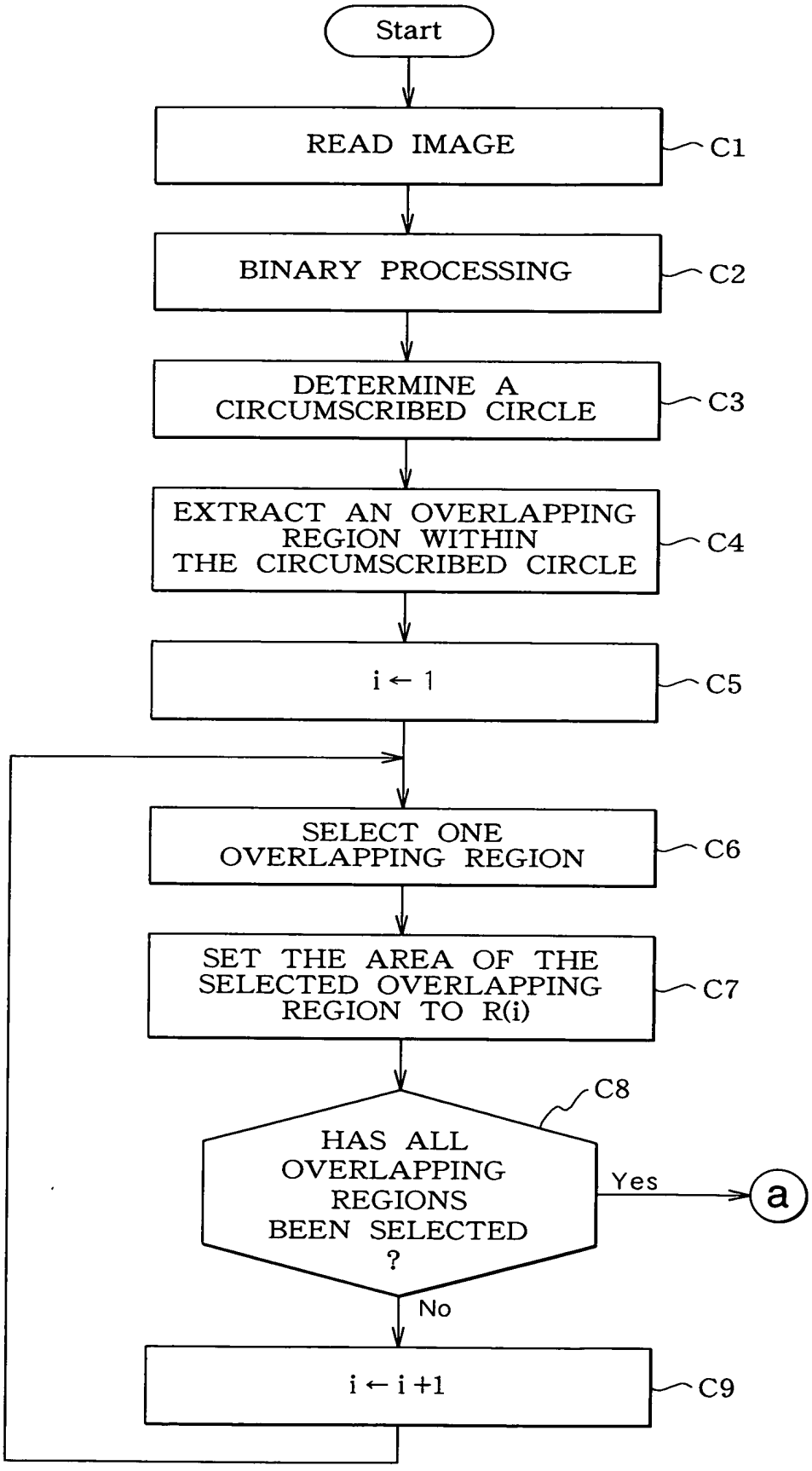
Start
READ IMAGE
C1
BINARY PROCESSING
C2
DETERMINE A CIRCUMSCRIBED CIRCLE
C3
EXTRACT AN OVERLAPPING REGION WITHIN THE CIRCUMSCRIBED CIRCLE
C4
i ← 1
C5
SELECT ONE OVERLAPPING REGION
C6
SET THE AREA OF THE SELECTED OVERLAPPING REGION TO R(i)
C7
C8
HAS ALL OVERLAPPING REGIONS BEEN SELECTED ?
Yes
a
No
i ← i +1
C9

FIG.7

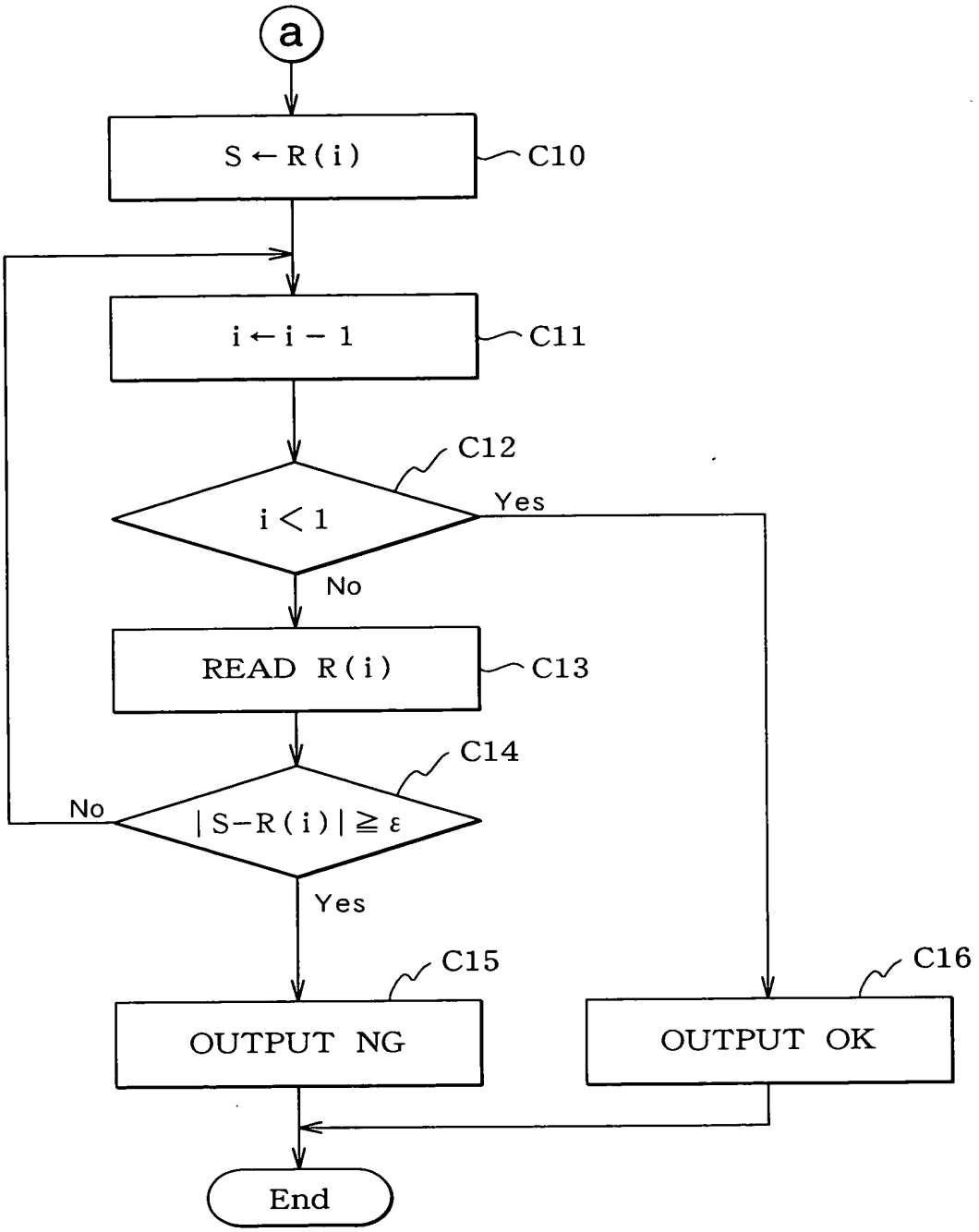
a
S ← R(i)
C10
i ← i − 1
C11
C12
i < 1
Yes
No
READ R(i)
C13
C14
|S−R(i)| ≧ ε
No
Yes
C15
C16
OUTPUT NG
OUTPUT OK
End

FIG.8

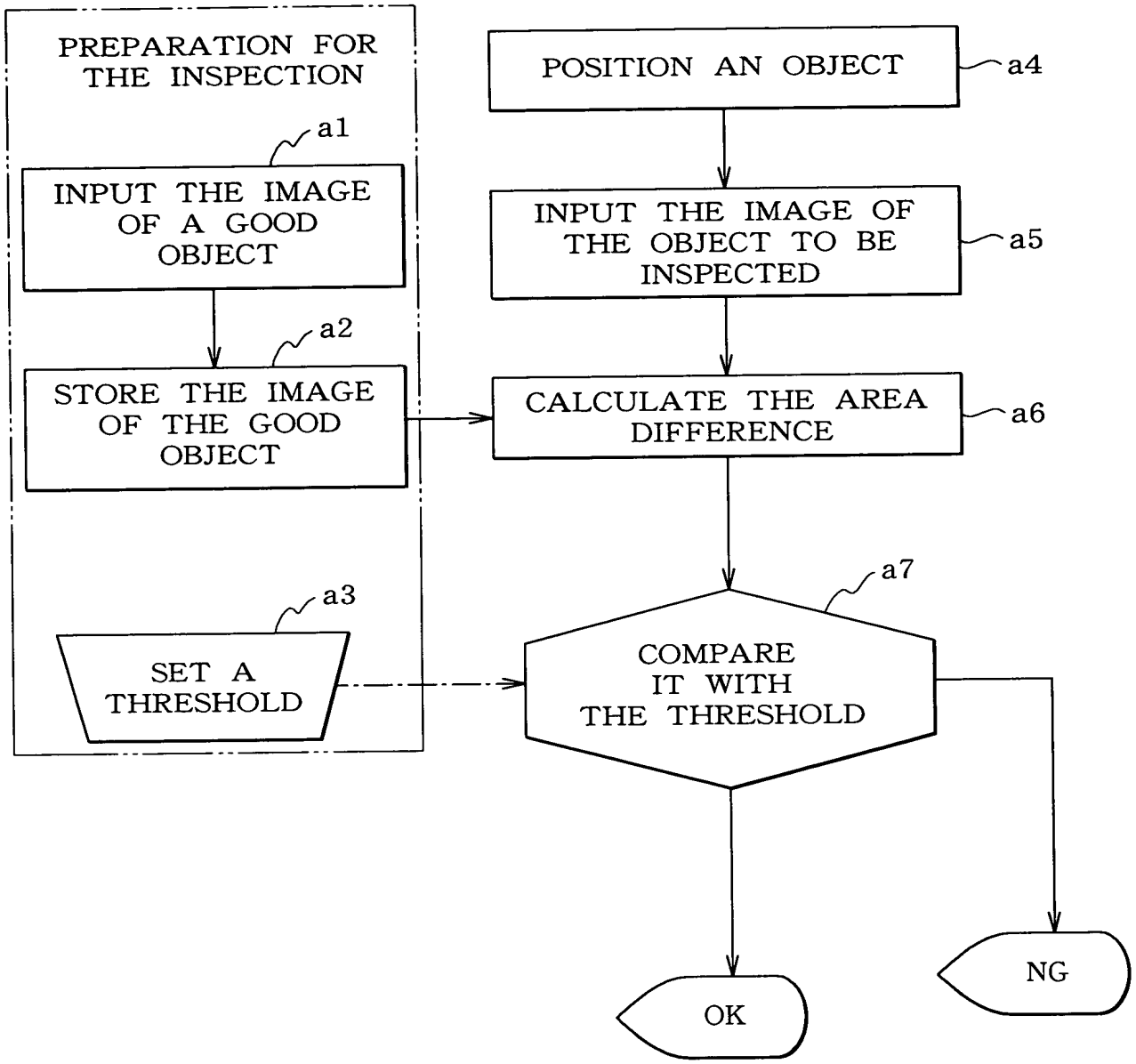
PREPARATION FOR THE INSPECTION
a1
INPUT THE IMAGE OF A GOOD OBJECT
a2
STORE THE IMAGE OF THE GOOD OBJECT
a3
SET A THRESHOLD
POSITION AN OBJECT
a4
INPUT THE IMAGE OF THE OBJECT TO BE INSPECTED
a5
CALCULATE THE AREA DIFFERENCE
a6
a7
COMPARE IT WITH THE THRESHOLD
OK
NG

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FIG.9(a)

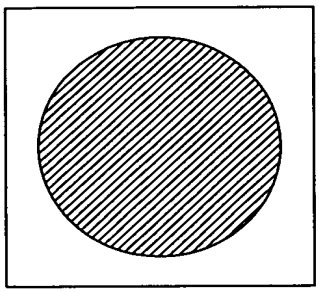


IMAGE OF A GOOD OBJECT

FIG.9(b)

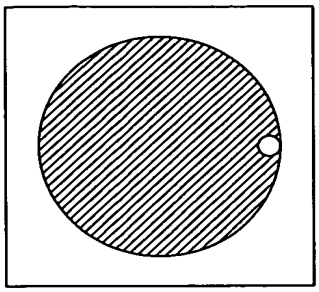
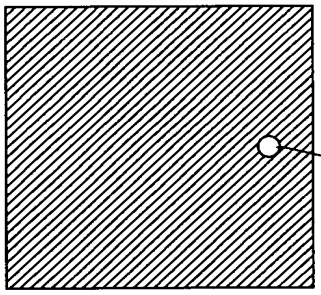


IMAGE OF A DEFECTIVE OBJECT

CALCULATION OF THE DIFFERENCE BETWEEN THE IMAGES

FIG.9(c)



EXTRACTION OF A DEFECT